

## Two new species of the genus *Upogebia* Leach, 1814 (Crustacea: Decapoda: Gebiidea: Upogebiidae) from the South China Sea

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**Abstract.** Two new species of the genus *Upogebia* (Decapoda: Gebiidae: Upogebiidae) from the South China Sea are described. *Upogebia jiaruii*, new species, most closely resembles *Upogebia baweana* Tirmizi & Kazmi, 1979 but differs markedly in having two smooth, strong transverse carinae on the dorsal surface of the telson. *Upogebia ruiyui*, new species, most closely resembles *Upogebia allspachi* Sakai, 2006 but differs markedly in having two transverse denticulate carinae on the dorsal surface of the telson and without sharp upper spine on the propodus of pereopod 1.

**Key words.** Upogebiidae, *Upogebia*, new species, South China Sea

### INTRODUCTION

There have been very few taxonomic studies on the genus *Upogebia* Leach, 1814 in the South China Sea. Liu & Zhong (1994) listed four species: *U. barbata* (Strahl, 1862), *U. carinicauda* (Stimpson, 1860), *U. darwinii* (Miers, 1884) and *U. spinifrons* (Haswell, 1881). Ngoc-Ho (2001) transferred *U. spinifrons* to the genus *Austinogebia* Ngoc-Ho, 2001. Komai (2000) listed seven species from the South China Sea: *U. ancyrodactyla* De Man, 1905, *U. carinicauda* (Stimpson, 1860), *U. darwinii* (Miers, 1884), *U. gracilis* Ngoc-Ho, 1990, *U. edulis* Ngoc-Ho & Chan, 1992, *U. wuhsienweni* Yu, 1931 and *U. takaoensis* Sakai & Türkay, 1995.

Sakai (2006) transferred *U. gracilis* to the genus *Paragebicuia* Sakai, 2006 and Ngoc-Ho (2001) transferred *U. edulis*, *U. wuhsienweni* and *U. takaoensis* to the genus *Austinogebia* Ngoc-Ho, 2001.

While working on the systematic study of the gebiidean fauna of the China seas, two undescribed species of the genus *Upogebia* were found from the Sanya Bay, South China Sea. This paper describes and illustrate the two new species. A total of six species of the genus *Upogebia* are known from the South China Sea including these two new species.

### MATERIAL AND METHODS

Material examined in this study were collected from the South China Sea and has been deposited in the Marine Biological

Museum (MBM), Institute of Oceanology, Chinese Academy of Sciences, Qingdao, China. The drawings were made with the aid of drawing tube mounted on a Zeiss Stemi Sv11 compound microscope. The following abbreviations are used throughout the text: cl, length of carapace (postorbital length of the carapace); ovig., ovigerous female.

### TAXONOMY

#### Family *Upogebiidae* Borradaile, 1903

#### Genus *Upogebia* Leach, 1814

#### *Upogebia jiaruii*, new species (Figs. 1–3)

**Material examined.** Holotype: male (cl. 4.3 mm), MBM136979/B92-B11-10, Sanya Bay, Hainan Province, South China Sea, intertidal zone with sandy substratum, coll. Kefeng Cui, 23 March 1992. Paratype: ovig. female (cl. 6.7 mm), MBM136991, data same as holotype. Others: 2 females (cl. 4.2–4.6 mm), MBM136790/CJ97C-160, Sanya Bay, Hainan Province, South China Sea, coll. Xinzheng Li, 3 March 1997.

**Description.** Rostrum (Figs. 1, 2A, B) rounded, about 0.7 times as long as basal width; anterior margin broadly convex, projecting slightly beyond eyes, bearing 2 small spiniform tubercles on each lateral margin, posterior one bigger than anterior one, without infrarostral spine; dorsal surface with dense setae and scattered many small tubercles extending onto gastric region of carapace. Carapace (Fig. 2A, B) with narrow lateral ridges, 10–11 small triangular teeth on lateral margin, weakly projecting forward, divided from lateral margin of rostrum by shallow notch; dorsal surface of carapace with dense setae but without conspicuous tubercles; anterolateral border unarmed; cervical groove long and deep, unarmed; postorbital region unarmed.

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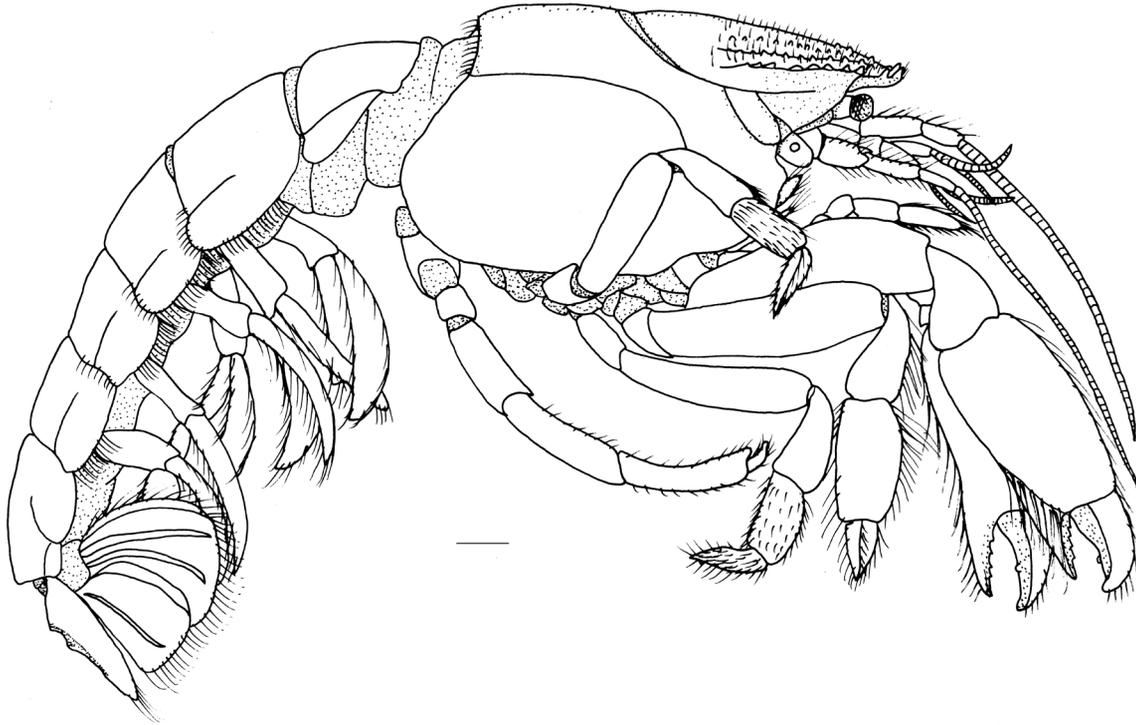


Fig. 1. *Upogebia jiaruii*, new species. Holotype male, MBM136979, entire animal, lateral view. Scale bar = 1mm.

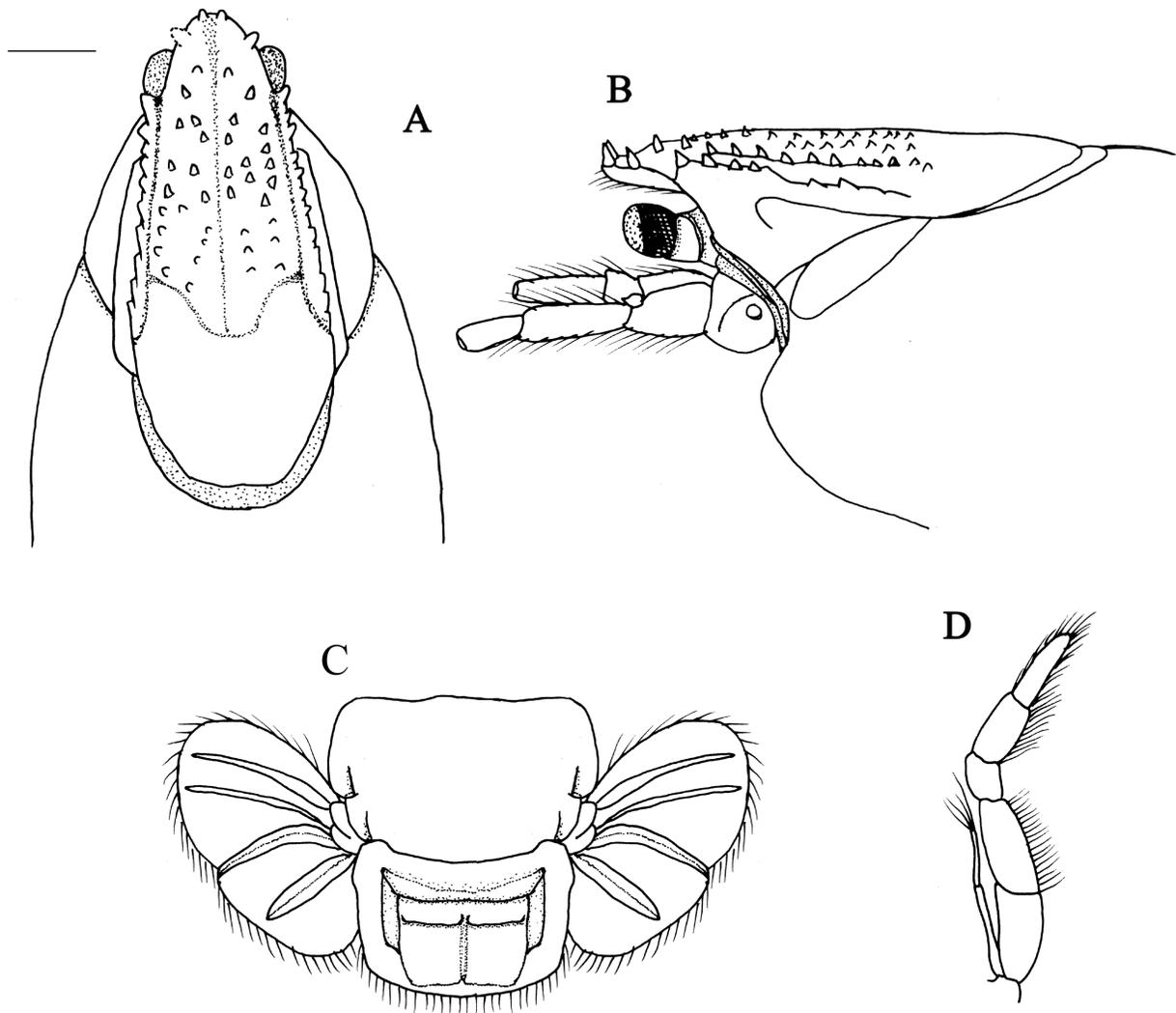


Fig. 2. *Upogebia jiaruii*, new species. Holotype male, MBM136979. A, anterior carapace, dorsal view; B, anterior carapace, lateral view; C, abdominal somite 6, telson and uropods, dorsal view; D, maxilliped 3, outer view. Scale bar = 1 mm (A, B, D); 0.6 mm (C).

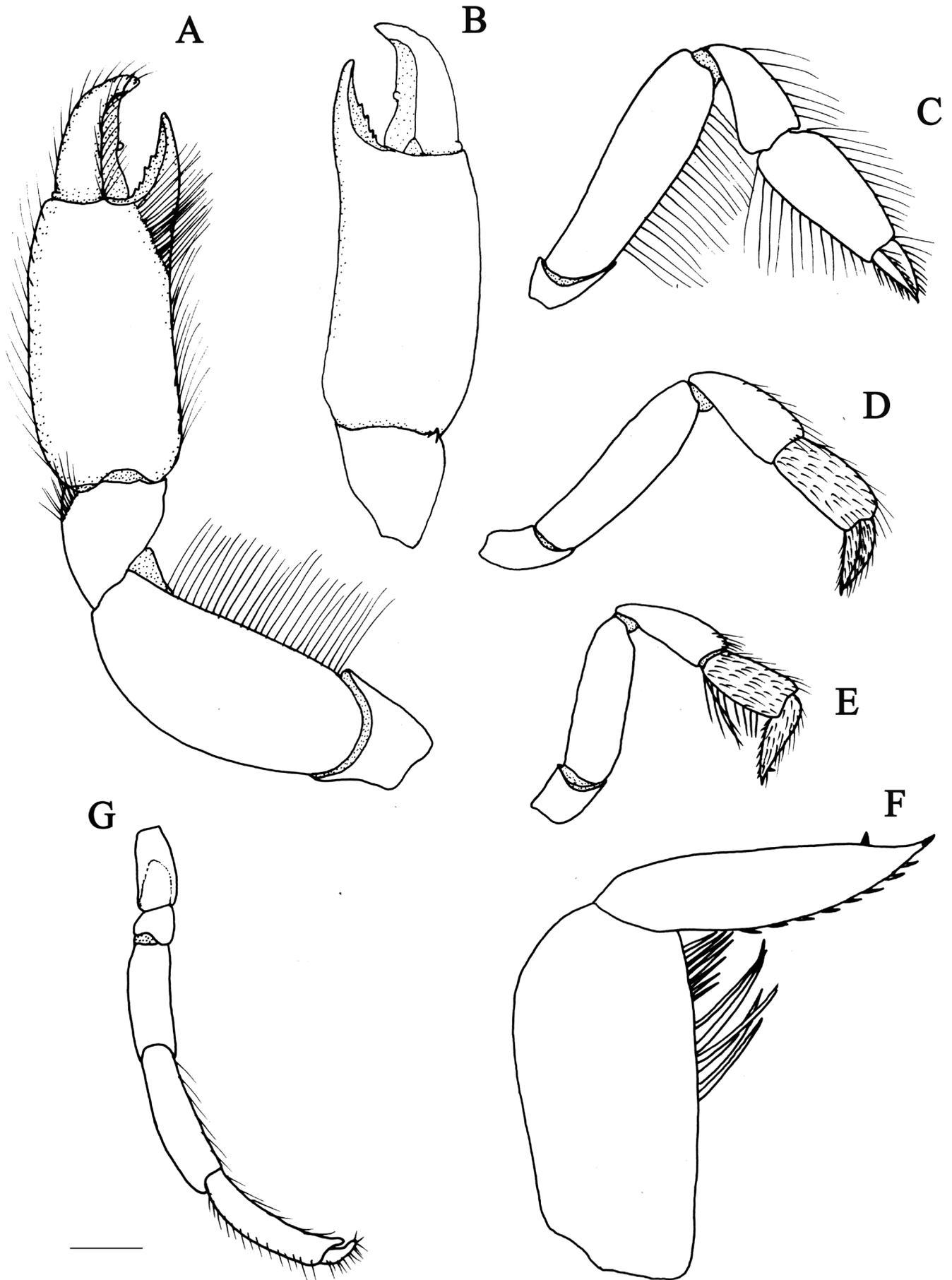


Fig. 3. *Upogebia jiaruii*, new species. Holotype male, MBM136979. A, right pereopod 1, outer view; B, right pereopod 1, inner view; C, pereopod 2, outer view; D, pereopod 3, outer view; E, pereopod 4, outer view; F, dactylus and propodus of pereopod 4; G, pereopod 5, outer view. Scale bar = 1mm.

Eyestalks stout (Fig. 2B), unarmed; cornea darkly pigmented. Antennular peduncle reaching article 4 of antennal peduncle, unarmed. Antennal peduncle unarmed; article 3 with apically pointed scale on upper surface.

Maxilliped 3 (Fig. 2D) moderately stout; exopod consisting of 2 articles, exceeding proximal half of merus.

Male pereopod 1 symmetrical, subchelate, slender (Fig. 3A, B). Basis and ischium unarmed. Merus about 2.0 times as long as high, 3.3 times as long as ischium, unarmed. Carpus triangular, about 0.5 length of merus, mesial face with 1 upper spine near to distal end. Propodus 1.9 times as long as high, 2.4 length of carpus, both lateral, mesial faces unarmed. Fixed finger triangular, shorter than dactylus; cutting edge curved, with 4–5 teeth on proximal half. Dactylus strong, about 0.4 length of palm; extensor margin arched, unarmed; cutting edge slightly curved, with 1 small blunt tooth at midlength; lateral surface carinate medially. Female pereopod 1 generally similar to that of male in shape and size.

Pereopod 2 (Fig. 3C) unarmed; merus about 3.2 times as long as high; carpus about 0.5 length of merus; propodus about 1.9 times as long as high; dactylus triangular, 0.5 length of propodus, terminating in corneous tip.

Pereopod 3 (Fig. 3D) unarmed; merus about 3.7 times as long as high; carpus about 0.6 length of merus; propodus about 2.3 times as long as high; dactylus slender, 0.7 length of propodus, terminating in corneous tip.

Pereopod 4 (Fig. 3E, F) with ischium unarmed. Merus unarmed, about 3.0 times as long as high. Carpus about 0.8 length of merus. Propodus about 1.8 times as long as high, with 16–19 long sharp bristle-like setae on distal half of lower margin. Dactylus terminating in corneous tip, slightly shorter than propodus, with 8–10 small bristle-like setae on lower margin and 1 small sharp spine on upper margin near distal end.

Pereopod 5 (Fig. 3G) semichelate, unarmed; dactylus elongate and curved.

Abdominal tergites smooth. Telson (Fig. 2C) subrectangular, slightly wider than long, 1.5 times as wide as long and about 0.9 length of abdominal somite 6; bearing two strong transverse carinae on dorsal surface; posterior margin broadly convex, unarmed.

Male pleopod 1 absent; pleopod 2–5 biramous, with exopods larger than endopods. Female pleopod 1 present, uniramous, consisting of 2 articles. Uropodal protopod unarmed (Fig. 2C); exopod rounded, almost as long as wide, slightly convex on posterior margin; endopod shorter than exopod, about 0.8 times as long as wide.

**Remarks.** This new species closely resembles *Upogebia baweana* Tirmizi & Kazmi, 1979 known from Indonesia, in the form of the rostrum (about 0.7 times as long as basal width) and both are armed with 2 small teeth on each lateral

margin (Tirmizi & Kazmi, 1979; Sakai, 1982; Ngoc-Ho, 1990; Sakai, 2006). It differs from *U. baweana* in the dorsal surface of the telson bearing two strong transverse carina (versus bearing one indistinctly elevated transverse carina); the posterior margin of the telson being broadly convex (versus slightly concave); the propodus of pereopod 1 being relatively short, about 1.9 times as long as high (versus about 2.7 times as long as high), cutting edge of dactylus with 1 small blunt tooth at midlength (versus with two low triangular teeth).

**Etymology.** The species is named in honour of the late Professor Jiarui Shen (C. J. Shen), from the Institute of Zoology, Chinese Academy of Sciences, for his great contribution to the Chinese carcinology.

**Distribution.** Presently known only from the type locality.

***Upogebia ruiyui*, new species**  
(Figs. 4–6)

**Material examined.** Holotype: female (cl. 4.2 mm), MBM136790/CJ97C-160, Sanya Bay, Hainan Province, South China Sea, intertidal zone with sandy substratum, coll. Xinzheng Li, 3 March 1997. Paratype: female (cl. 3.0 mm), MBM136790/C597C-160, same data as holotype.

**Description.** Rostrum (Figs. 4, 5A, B) triangular, about 1.1 times as long as basal width; anterior margin truncate, projecting beyond eyes, bearing 2 strong triangular teeth on each lateral margin, one pair of that on lateral angle, and the other pair of that on the middle of lateral margin, without infrarostral spine; dorsal surface with dense setae and scattered many small tubercles extending onto gastric region of carapace. Carapace (Fig. 5A, B) with narrow lateral ridges, 5–6 small triangular teeth on lateral margin, weakly projecting forward, divided from lateral margin of rostrum by shallow notch; dorsal surface of carapace with dense setae but without conspicuous tubercles; anterolateral border unarmed; cervical groove long and deep, unarmed; postorbital region unarmed.

Eyestalks stout (Fig. 5B), unarmed; cornea darkly pigmented. Antennular peduncle reaching article 4 of antennal peduncle, unarmed. Antennal peduncle unarmed; article 3 with ovate scale on upper surface.

Maxilliped 3 (Fig. 5C) moderately stout; exopod consisting of 2 articles, reaching to proximal third of merus.

Female pereopod 1 chelate, strong, symmetrical (Fig. 6A, B). Basis unarmed. Ischium with 3 ventral spines. Merus about 2.3 times as long as high, with row of about 10–11 ventral spines and 2 subterminal spines on dorsal margin. Carpus triangular, about 0.5 length of merus, with 1 small lower subdistal spine, mesial face with 4 spines near to distal end. Propodus 1.6 times as long as high, 2.4 length of carpus, upper margin with row of 6–7 tubercles on basal half and 1 subterminal tubercle, lower margin with row of 10–11 tubercles; mesial face unarmed. Fixed finger slender,

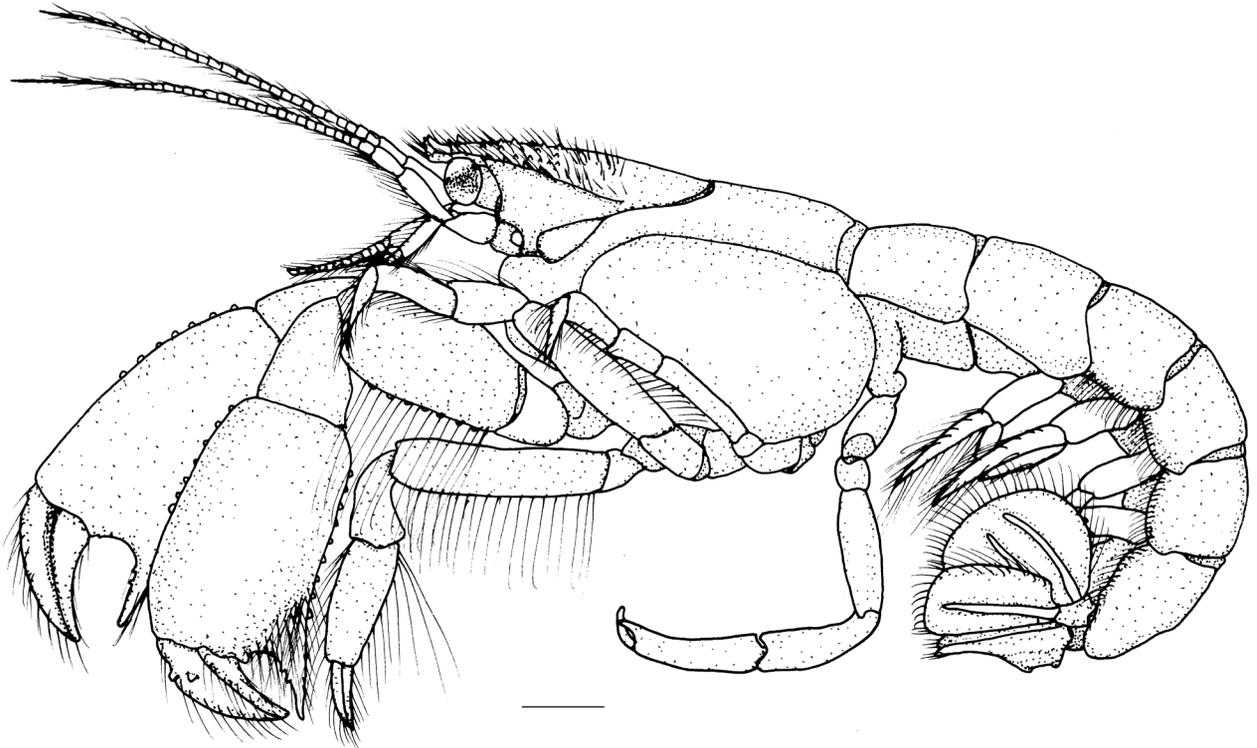


Fig. 4. *Upogebia ruiyui*, new species. Holotype female, C597C-160/MBM136790, entire animal, lateral view. Scale bar = 1mm.

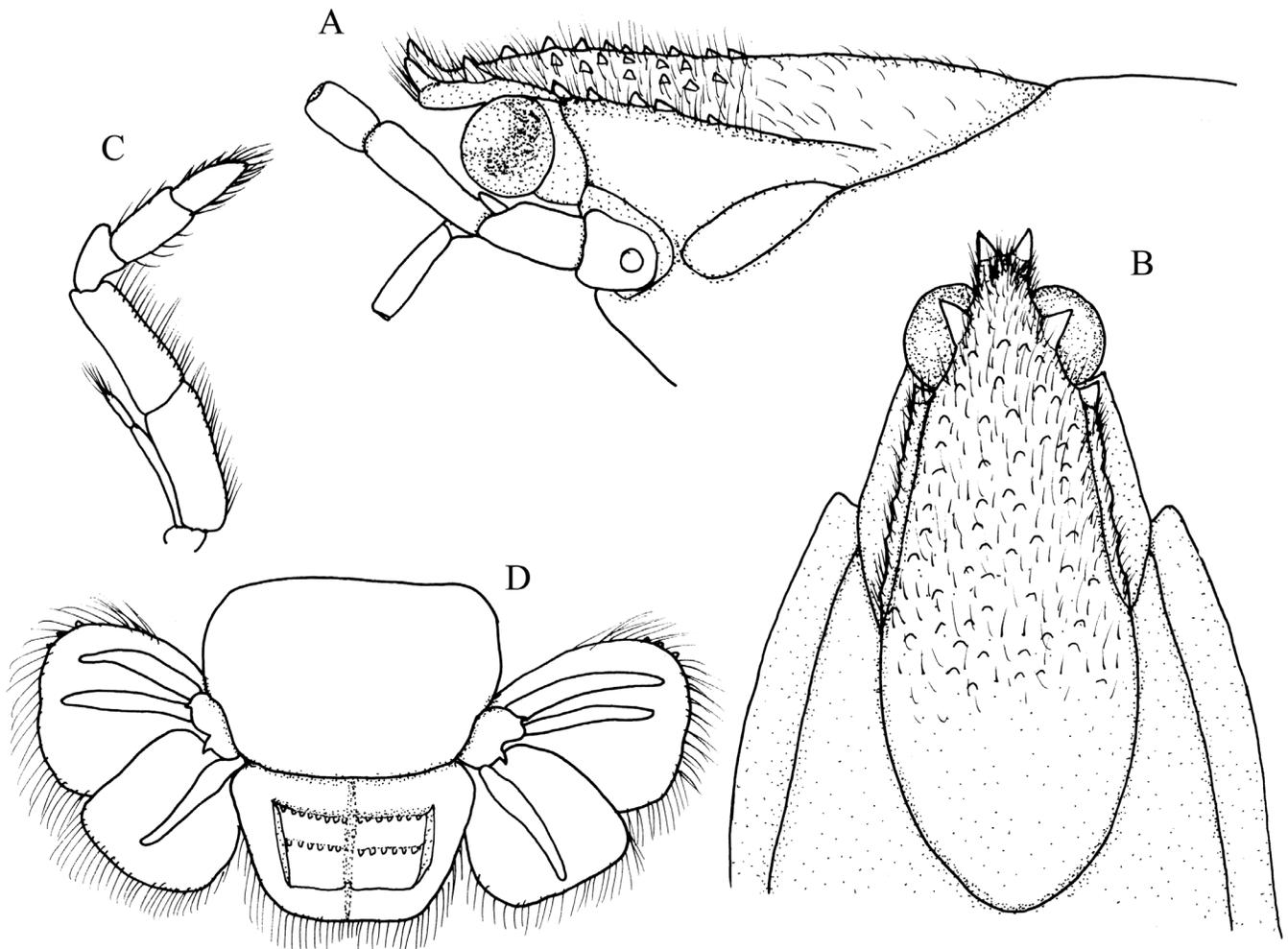


Fig. 5. *Upogebia ruiyui*, new species. Holotype female, C597C-160/MBM136790. A, anterior carapace, lateral view; B, anterior carapace, dorsal view; C, right maxilliped 3, outer view; D, abdominal somite 6, telson and uropods, dorsal view. Scale bars = 1 mm (A, B); 1.25 mm (C); 1.6 mm (D).

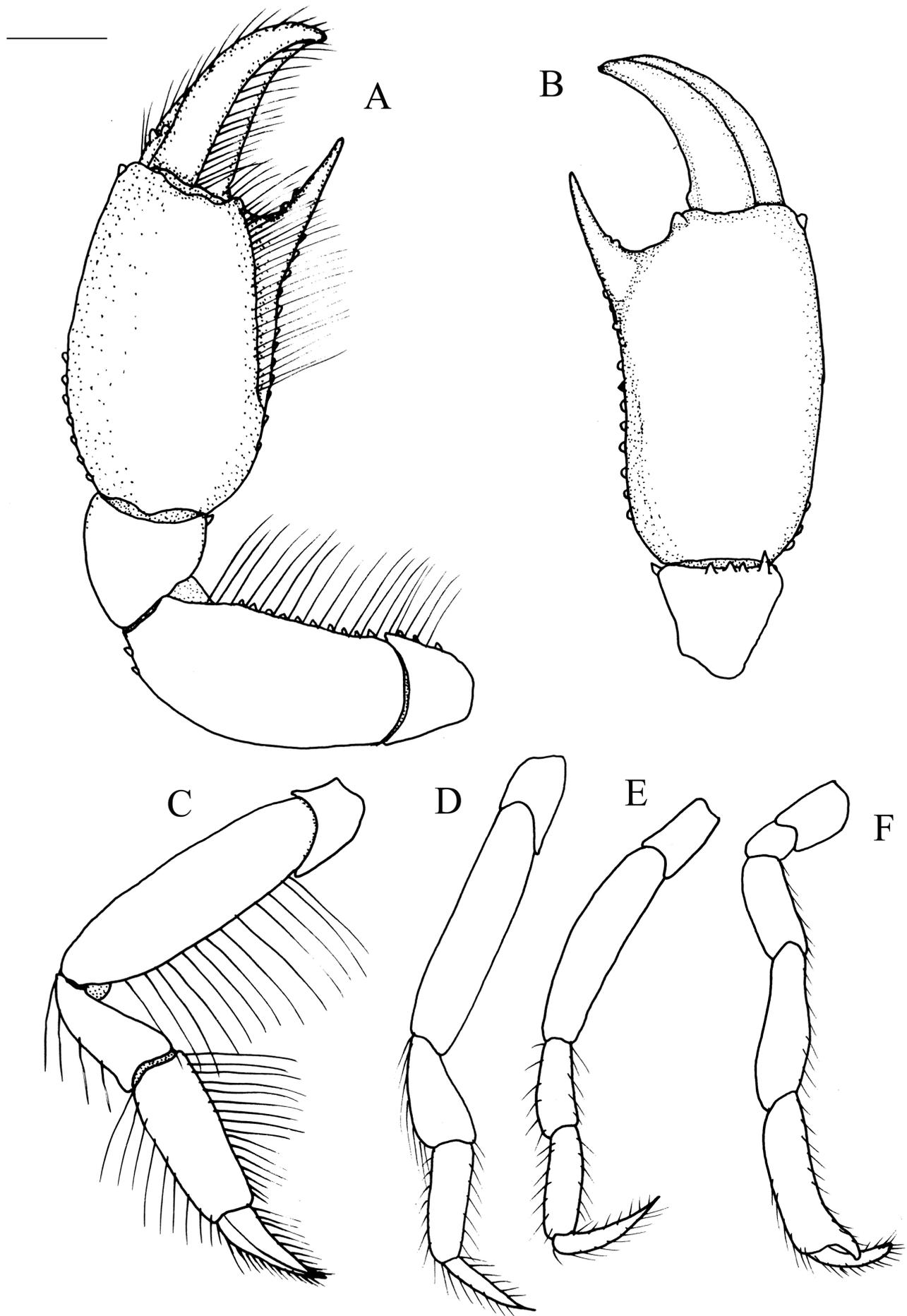


Fig. 6. *Upogebia ruiyui*, new species. Holotype female, C597C-160/MBM136790. A, right pereopod 1, outer view; B, right pereopod 1, inner view; C, pereopod 2, outer view; D, pereopod 3, outer view; E, pereopod 4, outer view; F, pereopod 5, outer view. Scale bar = 1mm.

narrow and sharply pointed; cutting edge slightly curved, with 2 inconspicuous teeth. Dactylus strong, terminating in corneous tip, about 0.4 length of palm; extensor margin arched, with 2 proximal small teeth; cutting edge curved, unarmed; lateral surface carinate medially.

Pereopod 2 (Fig. 6C) unarmed; merus about 3.6 times as long as high; carpus about 0.5 length of merus; propodus about 2.2 times as long as high; dactylus slender, 0.7 length of propodus.

Pereopod 3 (Fig. 6D) unarmed; merus about 4.4 times as long as high; carpus about 0.5 length of merus; propodus about 2.6 times as long as high; dactylus slender, 0.9 length of propodus, tapering distally.

Pereopod 4 (Fig. 6E) unarmed; dactylus slender and elongate, 1.1 length of propodus, tapering distally.

Pereopod 5 (Fig. 6F) semichelate, unarmed; dactylus elongate and curved.

Abdominal tergites smooth. Telson (Fig. 5D) subrectangular, 0.6 times as long as wide, and about 0.7 length of abdominal somite 6; bearing two transverse crista dentata consisting of a row of small spines on dorsal surface; posterior margin truncated, unarmed.

Female pleopod 1 present, uniramous, consisting of 2 articles. Uropodal protopod (Fig. 5D) bearing one spine each near bases of endopod and exopod; exopod rounded, almost as long as wide, bearing some small spines on distolateral margin, slightly convex on mesial margin; endopod shorter than exopod, about 1.1 times as long as wide.

**Remarks.** This new species closely resembles *Upogebia allspachi* Sakai, 2006 known from Fiji, in the form of rostrum, about 1.1 times as long as basal width and both are armed with 2 strong triangular teeth on each lateral margin (Sakai, 2006). It differs from *U. allspachi* in the upper margin of the propodus of pereopod 1 being armed with a row of 6–7 small tubercles (versus with a row of six sharp spines); lower margin being armed with a row of 10–11 small tubercles (versus only with a median triangular tooth), and the dorsal surface of the telson bearing two transverse denticulate carinae (versus bearing one strong transverse carina).

**Etymology.** The species is named in honour of the late Professor Ruiyu Liu (J. Y. Liu), the Institute of Oceanology, Chinese Academy of Sciences, for his great contribution to the Chinese carcinology.

**Distribution and habitat.** Presently known only from the type locality.

### Key to the species of the genus *Upogebia* Leach, 1814 from the South China Sea

1. Pereopod 1 subchelate.....*U. carinicauda* (Stimpson, 1860)  
– Pereopod 1 chelate .....2
2. Upper and lower margin of propodus in pereopod 1 with small tubercles.....*U. ruiyui*, new species  
– Upper and lower margin of propodus in pereopod 1 unarmed .....3
3. Posterior margin of abdominal somite 6 bearing spines .....  
.....*U. darwini* (Miers, 1884)  
– Posterior margin of abdominal somite 6 smooth.....4
4. Pereopod 1 fixed finger unarmed on cutting edge.....  
.....*U. barbata* (Strahl, 1862)  
– Pereopod 1 fixed finger proximally denticulate .....5
5. Telson with tubercles, bearing U-shaped carina .....  
.....*U. ancylodactyla* De Man, 1905  
– Telson without tubercles, bearing two transverse carina.....  
.....*U. jiaruii*, new species

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### LITERATURE CITED

- Borradaile LA (1903) On the classification of the Thalassinidea. *Annals and Magazine of Natural History*, 7: 534–551.
- Haswell WA (1881) Description of some new species of Australian Decapoda. *Proceedings of the Linnean Society of New South Wales*, 6: 750–763.
- Komai T (2000) A check list of Thalassinidea and Anomura (Crustacea: Decapoda) from the South China Sea. *Raffles Bulletin of Zoology*, Supplement 8: 343–376.
- Leach WE (1814) *Crustaceology*. In: Brewster D (ed.) *Edinburgh Encyclopaedia: Volume 7*, William Blackwood, Edinburgh. Pp. 385–437.
- Liu JY & Zhong ZR (1994) Thalassinidea. In: Huang ZG (ed.) *Marine Species and Their Distributions in China Seas*. China Ocean Press, Beijing. Pp. 562.
- De Man JG (1905) Diagnoses of new species of macrurous decapod Crustacea from the “Siboga-Expedition”. *Tijdschrift der Nederlandsche Dierkundige Vereeniging*, 9: 587–614.
- Miers EJ (1884) On some Crustaceans from Mauritius. *Proceedings of the Zoological Society of London*, 52: 10–17.
- Ngoc-Ho N & Chan TY (1992) *Upogebia edulis*, new species, a mud-shrimp (Crustacea: Thalassinidea: Upogebiidae) from Taiwan and Vietnam, with a note on polymorphism in the male first pereopod. *Raffles Bulletin of Zoology*, 40(1): 33–43.
- Ngoc-Ho N (1990) Nine Indo-Pacific species of *Upogebia* Leach (Crustacea: Thalassinidea: Upogebiidae). *Journal of Natural History*, 24: 965–985.
- Ngoc-Ho N (2001) *Austinogebia*, a new genus in the Upogebiidae and rediagnosis of its close relative, *Gebiacantha* Ngoc-Ho, 1989 (Crustacea: Decapoda: Thalassinidea). *Hydrobiologia*, 449: 47–58.

- Sakai K (1982) Revision of Upogebiidae (Decapoda, Thalassinidea) in the Indo-West Pacific region. *Researches on Crustacea*, Special Number 1: 1–106.
- Sakai K & Türkay M (1995) Two upogebiid species from the Persian-Arabian Gulf, with a description of a related new species from Taiwan (Crustacea: Decapoda: Upogebiidae). *Senckenbergiana Maritima*, 25(4/6): 197–208.
- Sakai K (2006) Upogebiidae of the world (Decapoda, Thalassinidea). *Crustaceana Monographs*, 6: 1–185.
- Stimpson W (1860) Notes on North American Crustacea, in the Museum of the Smithsonian Institution, No. II. *Annals of the Lyceum of Natural History of New York*, 7: 177–246.
- Strahl C (1862) On some Thalassiniae sent from the Philippines by M. Jagor, and on the systematic position of that family. *Annals and Magazine of Natural History (Series 3)*, 9: 383–396.
- Tirmizi NM & Kazmi QB (1979) Results of the study of the type material of some species of *Upogebia* (Decapoda, Thalassinidea). *Crustaceana*, Supplement 5: 105–114.
- Yu SC (1931) On some species of shrimp-shaped Anomura from North China. *Bulletin of the Fan Memorial Institute of Biology (Zoology)*, 2(6): 85–96.